Remarks

Claims 1-40 are presented for examination.

Claim 11 has been amended to more clearly distinguish applicant's claims from the prior art.

The allowance of applicant's Claims 1-10 and 30-40 and the indication of allowability of Claims 20 and 29, suitably amended, is acknowledged with appreciation.

Applicant's Claims 11, 12, 15-19 and 21-28 stand rejected under 35 U.S.C. 103 (a) as being unpatentable over *Bradley* (U.S. 4,809,776) in view of *Callahan et al* (U.S. 4,436,151). This rejection is respectfully traversed.

All of the rejected claims depend directly or indirectly from rejected Claim 11. Applicant's Claim 11, in important part, calls for a well surface operated system in which a plug, released from a mandrel, carries a closure device to seal a flow passage extending through the plug when the plug is released from the mandrel. The examiner proposes combining the teachings of *Bradley* and *Callahan et al* to teach this feature of applicant's invention. It is respectfully submitted that the proposed combination of teachings does not respond to the limitations of applicant's Claim 11 and that a device containing the features combined as suggested in the rejection would be inoperative and, moreover, would fail to meet the intended objectives of the inventors of either of the prior art devices.

In rejecting applicant's claims, it is stated that *Bradley* discloses all of the limitations of the claims except for a first one-way check valve for sealing a central opening through the plugs when the plugs and seals are displaced from the mandrel. The examiner contends that "In Figure 3B, *Callahan et al* teaches a one-way check valve (53) for sealing the central opening of a plug when the plug, and its seal, are displaced down the wellbore tubular."

It is respectfully noted that the one-way check valve 53 of *Callahan et al* prevents the reverse flow of fluids through the central opening of the wiper plug 34. If the *Bradley* plug were equipped with a one-way valve such as the valve 53 of *Callahan et al*, it would not be operative to perform the stated objectives of the *Bradley* invention. The *Bradley* plug, like the plug of applicant's invention, is designed to be propelled through the casing by the application of fluid pressure applied from the well surface. Thus, if the *Bradley* assembly were modified as suggested by the examiner, upon the application of pressure from the surface, the one-way check valve 53 would open and no pressure differential would result across the *Bradley* plug. The result is that the *Bradley* plug could not be advanced through the casing string to provide its required wiping and sealing functions.

In order to make the *Bradley* system operable using a one-way valve such as taught in *Callahan et al*, it is necessary to reverse the direction of operation of the *Callahan et al* valve so that it will remain closed when pressure is applied from the well surface. This, however, is applicant's invention. The suggestion to assemble a system such as disclosed in applicant's specification, and defined in applicant's Claim 11, comes solely and exclusively from applicant's disclosure.

The examiner contends that it would have been obvious to include the one-way check valve of *Callahan et al* on the plugs of *Bradley* in order to have allowed the plug to be displaced down the wellbore without fluids located below the plug being displaced up through the plug. It is respectfully submitted that such a conclusion is not well founded. While it is indeed the function of the *Callahan et al* check valve to prevent the reverse flow of fluid through the *Callahan et al* assembly, there is no such requirement in the assembly taught by *Bradley*. Moreover, when fluid pressure is applied behind the one-way acting (forward flow preventing)

valve assembly of the *Bradley* plug to propel the plug through the casing, the forward-flow preventing valve itself will preclude the passage of any fluids from downstream of the plug, thereby making the one-way (reverse flow) valve of the *Callahan et al* assembly superfluous.

It is respectfully submitted that applicant's invention has features and advantages that are not part of the cited prior art or any appropriate combination of such art. Thus, for example as noted in applicant's specification and as called for in applicant's Claim 11, applicant's invention is capable of deploying a plug wherein the release mechanism actuator is separate from the plug. One result of this feature is that components used to release the plug from the running tool are not carried to the bottom of the well. Neither the *Bradley* nor the *Callahan et al* devices has the capability of deploying a plug wherein the release mechanism actuator is separate from the plug and as a result, neither device exhibits this advantage or characteristic found in applicant's invention.

It is respectfully submitted that it is applicant's specification, and not the prior art references, whether taken alone or any appropriate combination, that teaches the limitation of a first flow passage closure device, separate from the release mechanism actuator, carried by the first plug in which the first flow passage closure device is operable when the plug is released from the mandrel to seal the flow passage extending through the plug.

In an effort to even more fully distinguish applicant's claim from the proposed combination of the prior art, Claim 11 has been amended to add the functional language that the fluid conducted axially through the mandrel flow passage to the first plug from the surface will move the first plug through the casing. As noted previously, an assembly such as that of *Bradley* having a one-way valve such as taught by *Callahan* does not move the plug through the casing in response to the application of fluid conducted axially through the mandrel flow passage.

As argued in applicant's first response, it is respectfully submitted that if the *Bradley* assembly of ball 256, sliding sleeves, seal rings and shear pins are considered to be carried by the mandrel and to include the release mechanism actuator and the release mechanism, it is evident that the *Bradley* assembly lacks a first flow passage closure device that is separate from the release mechanism. It is again respectfully submitted that the ball 256 of *Bradley*, which corresponds most closely to applicant's recitation of a closure device, is not separate from the release mechanism actuator but is in fact an integral part of such structure.

A distinction between the *Bradley* structure and applicant's structure is that the ball 256 of the reference device is carried to the bottom of the casing with the displaced plug whereas the ball of applicant's invention remains with the mandrel. See applicant's specification at page 8, line 3 *et seq* stating "An important feature of the present invention is the elimination of the use of a ball or dart that must remain in the wiper plug to act as the flow closure element for the deployed wiper plug."

The examiner contends that the combined teachings of the *Bradley* and *Callahan et al* references would have suggested applicant's claimed invention of a first flow passageway closure device that is separate from the release mechanism. It is respectfully submitted, however, that neither of the references recognized the need for or the advantage of a system such as applicant's wherein the release mechanism is not carried to the bottom of the well. Neither the *Bradley* nor the *Callahan et al* devices has the capability of deploying a plug wherein the release mechanism actuator is separate from the plug and as a result, neither exhibits this advantage or characteristic found in applicant's invention.

It is respectfully submitted that the examiner is incorrect in concluding that the motivation to combine *Bradley* and *Callahan et al* would be to have allowed the plug to be

displaced down the wellbore without fluids located below the plug being displaced up through the plug. Is respectfully submitted that this is simply not a desired function of the passage blocking mechanisms of any of the devices wherein the plug is to be advanced through the well casing.

To the extent of that applicant's Claims 12 and 21 depend from independent Claim 11, it is respectfully submitted that such claims are distinguishable over the proposed combination of the *Bradley* and *Callahan* references for reasons hereinbefore set forth with regard to Claim 11. Accordingly, it is respectfully submitted that applicant's Claims 11, 12 and 21 are patentably distinct over the proposed combination of the references and allowance of such claims over the references is respectfully solicited.

Applicant's Claim 26 depends indirectly from Claim 11. Accordingly, Claim 26 distinguishes over the cited art for the previously stated reasons that Claim 11 distinguishes over such art. Moreover, the examiner appears not to have given consideration to applicant's argument that Claim 14 adds the further limitation to independent Claim 11 that the mandrel and the release mechanisms and the release mechanism actuators are retrievable to the well surface with a running tool after the first and second plugs are released from the mandrel. Neither *Bradley* nor *Callahan* teach retrieval of components as recited in applicant's Claim 14. As clearly noted in the devices of each of the references, the release mechanism actuators used to release the plugs from their connection with the running tool remain with the plugs.

To the extent that applicant's Claims 15 and 26 also depend from independent Claim 11, it is respectfully submitted that such claims distinguish over the proposed combination of the references for the reasons already submitted with regard to Claim 11. It is also respectfully

submitted that Claims 15 and 26 further distinguish over the proposed combination of references to the extent that additional limitations are being added by the claims.

With regard to applicant's Claims 16, 17 and 27, the examiner contends that the flapper valve of *Callahan* would include a seal on the valve seat as well as a seal on a flapper in order to form a fluid tight seal thus preventing fluid flow therethrough. The examiner further states that when the flapper valve was in is closed position, the seals would be protected from the wellbore environment. These constructions of the *Callahan* reference as applied to applicant's claims are again respectfully traversed.

Applicant's Claims 16, 17 and 27 depend directly or indirectly from independent Claim 11. For the reasons hereinbefore advanced with regard to Claim 11, it is respectfully submitted that the claims dependent therefrom are also distinguishable over the art cited against Claim 11.

In again rejecting applicant's Claims 16, 17 and 27, it is respectfully submitted that the examiner has failed to respond to applicant's points of distinction between the claims and the cited art. As previously noted, applicant's Claim 16 recites that the sealing surface seat and the sealing component that engage and seal to close the wiper plug flow passage are protected from erosion when the plug is carried by the mandrel. It is respectfully noted that the flapper 59 and flapper seat of *Callahan* are exposed to erosion each time fluid flows through the cementing assembly. In view of the fact that the flapper and seat are thus exposed to erosion while the first plug is carried by the mandrel, it is respectfully submitted that such components are not protected from erosion.

Similarly, with respect to Claims 17 and 27, it is again respectfully submitted that the *Callahan* sealing surfaces are not protected from erosion caused by fluids flowing through the well casing before the plugs of the *Callahan* assembly are released from the mandrel.

Applicant's Claims 13 and 14 stand rejected under 35 U.S.C. 103(a) as being unpatentable over *Bradley (U.S. 4,809,776)* in view of *Callahan et al (U.S. 4,436, 151)* as applied to Claim 11 and further in view of *McMullin* (U.S. 4,624,312). This rejection is respectfully traversed.

It is respectfully noted that the distinctions and arguments hereinbefore presented relating to the proposed combination of the *Bradley*, *Callahan* and *McMullin* references are applicable to the presently proposed combination of such references in rejecting Claims 13 and 14. It is specifically noted that none of the three references cited by the examiner teaches the retrieval of the mandrel release mechanism and the release mechanism actuator to the well surface with a running tool after the first plug is released from the mandrel. Accordingly, it is again respectfully submitted that these claims are patentable over the teachings of the cited references or any appropriate combination thereof and allowance of such claims is respectfully solicited.

Applicant again cites and asserts the following authority with regard to the appropriateness of the rejections entered against the claims. With respect to the rejection of applicant's claims under 35 U.S.C.§103 based on the combined teachings of multiple prior art references, it is respectfully submitted that the proposed combination of prior art teachings does not render applicant's claims unpatentable. It is respectfully submitted specifically that the only suggestion for combining the features of the prior art in the manner suggested in the rejection of applicant's claims is derived from applicant's disclosure and not the prior art.

The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed.Cir.1991). See MPEP §2143 - §2143.03 for decisions pertinent to each of these criteria.

"To support the conclusion that the claimed invention is directed to obvious subject matter, either the references must expressly or impliedly suggest the claimed invention or the examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references." *Ex parte Clapp*, 227 USPQ 972, 973 (Bd. Pat. App. & Inter. 1985).

Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992).

The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990)

Although a prior art device "may be capable of being modified to run the way the apparatus is claimed, there must be a suggestion or motivation in the reference to do so." 16 USPQ2d at 1432.). See also *In re Fritch*, 972 F.2d 1260, 23 USPQ2d 1780 (Fed. Cir. 1992).

Applicant has also pointed out that the proposed combination of prior art teachings suggested in rejecting applicant's claims would render the individual devices of the references unsuited for their intended usage and would render them inoperative, thus changing their principle of operation.

If the proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984)

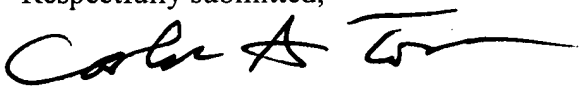
If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959).

It is also been noted by applicant that even when the prior art teachings are combined in the manner suggested in rejecting applicant's claims, the resulting combination fails to meet all of the limitations of applicant's claims.

To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). "All words in a claim must be considered in judging the patentability of that claim against the prior art." *In re Wilson*, 424 F.2d 1382, 165 USPQ 494, 496 (CCPA 1970).

In view of the foregoing, it is respectfully submitted that all of applicant's claims are distinguishable over the cited art, or any appropriate combination thereof, and that this application is in condition for allowance and such action is respectfully solicited.

Respectfully submitted,



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